

Method for managing a peripheral and computer system  
using same

5 The present invention relates to a method of managing a peripheral. It also relates to a computer system using this method.

10 Hitherto, the transmission of data to a peripheral has been done by means of two peripheral drivers, the one installed on the source equipment, in this instance a computer, which may despatch a command to the peripheral, and the other directly on the peripheral, in particular a printer.

15 Thus, the data transmitted to the peripheral are firstly processed by the driver installed at the computer, then transmitted to the peripheral, in a form interpretable by the peripheral's own driver. The  
20 peripheral then processes the data received by means of its own driver, and formulates instructions for executing a command corresponding to the data.

The driver is a computer program responsible for  
25 ensuring an interface between two pieces of equipment by tailoring the data transmitted by the source equipment so as to be intelligible by the destination equipment.

30 There are almost as many drivers of a type of peripheral as there are marketed types of this peripheral, multiplied by the number of operating systems of the source equipment existing on the market.

35 This compels the user to instal the peripheral driver corresponding to his peripheral and to the version of the operating system of his source equipment. This driver sometimes does not exist.

This also makes it compulsory to keep a large number of drivers up to date for each peripheral.

Thus, in view of the foregoing, the aim of the invention is to provide a method of managing a peripheral not requiring the use of a driver of this peripheral on the source equipment.

Hence, according to the invention, there is proposed a method of managing a peripheral consisting in:

- transmitting data written by means of a content description language to the peripheral;
- interpreting the data by means of interpretation software hosted within the peripheral; and
- translating the interpreted data into data for controlling the peripheral by means of a driver hosted within the peripheral.

Thus, no driver of the peripheral is used in the source equipment, thereby avoiding the need to update a very large number of drivers on each piece of source equipment using the peripheral.

According to a mode of implementation of this method, the result of the processing of the data by the interpretation software of the peripheral is stored in means of storage of the peripheral.

According to a mode of implementation of this method, in the course of the data writing step, the data is separated into content description data and presentation or form description data. Included within the content description data is an addressing indicating the location of the presentation description data of said content description data. During the interpretation step the addressed presentation description data are retrieved.

Advantageously, the presentation description data are

stored within a server identified by the addressing.

Furthermore, the presentation description data are transmitted to the peripheral as a function of the characteristics of the peripheral. This makes it possible to customize the response as a function of the characteristics of the peripheral.

Furthermore, the characteristics of the peripheral are conveyed by a header of a message of the communication protocol used to convey the data.

According to a mode of implementation of the method, the content description language is, for example, a hypertext markup language.

The interpretation software is, for example, a web browser.

According to the invention, there is also proposed a peripheral management system comprising at least one computer and one printer attached in a network.

The computer comprises means for transmitting data written in a content description language to the printer, and the printer comprises interpretation software and a printer driver for translating the interpreted data into the form of printing control data. It is thus possible to download a file from a server and transmit this file, for example a web page, to the printer, which formulates the printing commands on the basis of the data interpreted in the content description language.

According to another characteristic of the system according to the invention, the latter furthermore comprises a server hosting the data written in a content description language and a set of presentation description files of content description data

corresponding to the set of data hosted in the server.

5 The content description data may contain an addressing indicating the location of the content data presentation description file, hosted in the server, and the name of this file. The interpretation software of the printer comprises means for retrieving this presentation description file on the server on the basis of said addressing.

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According to another characteristic of the system according to the invention, the printer comprises means for communicating identifying characteristics of said printer to the server. The server comprises means for  
15 processing the characteristics of the printer so as to transmit thereto a version of the presentation description file corresponding to the characteristics of the printer.

20 Preferably, the characteristics of the printer are conveyed in a header of a protocol employed for the transfer of the file, for example the HTTP "HyperText Transfer Protocol" protocol standardized by the IETF "Internet Engineering Task Force".

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According to an embodiment, the addressing of the presentation description file is, for example, a URI "Uniform Resource Identifier" address standardized by the IETF.

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According to an embodiment, the content description language is, for example, the X-HTML "eXtended HyperText Markup Language" language standardized by the consortium known by the title W3C "World Wide Web  
35 Consortium", and the presentation description language is, for example, the CSS "Cascading Style Sheet" language standardized by the W3C.

Other aims, characteristics and advantages of the

invention will become apparent on reading the following description, given merely by way of nonlimiting example, and offered with reference to the appended drawings in which:

- 5           - Figure 1 is a schematic diagram illustrating a computer system according to the invention.
- Figure 2 is a schematic diagram illustrating another embodiment of the computer system of figure 1.
- 10          - Figure 3 is a flowchart illustrating a management method used by the computer system of figure 1.
- Figure 4 is a flowchart illustrating a management method used by the computer system
- 15           of figure 2.

With reference to figure 1, the computer system according to the invention comprises a source piece of equipment 1, for example a computer, and a peripheral 3  
20       consisting of a printer. The invention applies however to any type of peripheral. The two pieces of apparatus are linked as a network 9.

The printer 3 is provided with means of storage into  
25       which are loaded data transmitted by the computer 1, and software means allowing the reception of data emanating from the computer 1 and their processing so as to cause the printing of a file received.

30       In particular, these software means comprise software 4 for interpreting the data transmitted by the computer 1, as well as a printer driver 5, and are supplemented with a network interface 11.

35       The computer 1 for its part comprises all the hardware and software means making it possible to exchange data with the printer, including a network interface 10, as is known per se.

It furthermore comprises means making it possible to transmit to the printer data to be printed written in a content description language.

- 5 For this purpose, for example, use is made of a hypertext markup language (X-HTML) which makes it possible to describe a file using a set of markers.

10 According to a first embodiment, represented in figure 1, the file thus formulated contains, on the one hand content description data and, on the other hand, presentation description data.

15 However, as shown by figure 2 which diagrammatically illustrates another embodiment of a computer system according to the invention, this system furthermore comprises a server 6 which contains a set 8 of presentation description files. Each file corresponds to a type of printer to be used.

20 The computer furthermore comprises means for transmitting the data to be printed by the network interface 10 in the form of a content description file associated with an address, for example a URI address, 25 serving for the addressing of the presentation description file.

The content description language is, for example, the X-HTML 1.1 language, and the presentation description 30 language is, for example, the CSS 2.0 language.

To allow the printer to provide indications pertaining to its characteristics, it comprises software 13 35 capable of inserting information into the header of signals of the protocol used to convey the data from the printer 3 to the server 6.

To detect the nature of this printer, the server 6 comprises software 7 capable of processing the

characteristics of the printer 3 that are inserted by the software 13 and transmitted by the network interface 11.

- 5 A transmission of a document to be printed to the printer 3 will now be described with reference to figure 3.

10 The transmission begins with a first step 31 in the course of which the computer 1 transmits the data file (document) to be printed, by the network interface 10, in a content description language, to the network interface 11 of the printer 3. Data interpretation software 4 interprets them (step 32) and transmits the  
15 interpreted data to the printer driver 5. The driver 5 translates these interpreted data into printer control data (step 33), so as to control the printing of the document.

- 20 With reference to figure 4, in another embodiment of the method according to which a server is used, the transmission begins with a first step 41 in the course of which the computer 1 transmits by the network interface 10 to the network interface 11 of the printer  
25 3 the data (document) to be printed, in a content description language suitable for separating the content description and the presentation description.

30 As indicated previously, the data transmitted take the form of a content description file comprising an addressing of the presentation description file allowing the retrieval of the presentation description file corresponding to the printer.

- 35 Data interpretation software 4 interprets the content description file (step 42), downloads the presentation description file by means of the addressing included in the content description file (step 43), interprets the presentation description file (step 44) then transmits

the interpreted data to the printer driver 5. The driver 5 translates these interpreted data into printer control data (step 45), so as to control the printing of the document.

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Step 43 of downloading the presentation description file is performed in several phases. Firstly the software 4 makes a request to download the presentation description file to the network interface 11, then the  
10 network interface 11 transmits the download request to the network interface 12 of the server 6. The software 7 transmits the file requested by the network interface 12 of the server 6 to the network interface 11 of the printer 3, which transmits it to the data  
15 interpretation software 4 which interprets it.

In another embodiment of step 43 according to the invention, the printer 3 transmits via the interface 11 its characteristics inserted by the software 13 to the  
20 network interface 12 of the server 6, by means of the header of a message of the communication protocol chosen to convey the data. The server 6 is then equipped with software 7 capable of processing the characteristics of the printer, and of transmitting  
25 thereto a version of the presentation description file corresponding thereto.

Step 43 then comprises extra phases. Specifically, additionally, the software 13 transmits to the  
30 interface 11 the characteristics of the printer for insertion into the header of the protocol, these characteristics are analyzed by the software 7 which proceeds to the selection of the file corresponding to the request and to the characteristics of the  
35 printer 3.